Amendments to the Specification and Abstract:

Please add the following new paragraph at page 1, before the heading "FIELD OF THE INVENTION":

This is a Rule 1.53(b) Divisional Application of Serial No. 10/227,456, filed August 26, 2002, which is a Rule 1.53(b) Continuation Application of Serial No. 09/450,590, filed November 30, 1999.

Please amend the paragraph beginning at page 5, line 3, as follows:

According to a second aspect of the present invention, in the data transmission method of the first aspect, when the retransmission buffer is filled up to its capacity, an ~~updation~~ updating process is performed, in which the retransmission data are retained while the data stored in the retransmission buffer are discarded in order, starting from a packet of the earliest reproduction time, on the basis of the reproduction time of each packet stored in the retransmission buffer. Therefore, the transmission quality in a radio section in real-time transmission is improved and, further, the number of retransmission times is reduced.

Please amend the paragraph beginning at page 9, line 8, as follows:

According to an eighth aspect of the present invention, there is provided a data transmission method in which data transmission from the transmitting end to the receiving end is continuously performed in units of packets, each packet having additional information relating to its sequence number, priority, and data reproduction time at the receiving end, while successively reproducing data of packets which have arrived at the receiving end and, at this time, only packets which can be in time for data reproduction at the receiving end are retransmitted. This method comprises ~~the steps of:~~ at the transmitting end, giving a data reproduction time at the receiving end to each packet to be transmitted; and storing, as retransmission data, only data of packets the priorities of which are equal to or higher than a predetermined value, in a retransmission buffer; at the receiving end, when a transmission error is detected, detecting the reproduction time for an error packet and the arrival time of the error packet, and deciding an arrival time limit in accordance with the reproduction time; and when the error packet has arrived before the arrival time limit, outputting a retransmission request

for the error packet to the transmitting end by indicating the sequence number of this error packet; at the transmitting end, when the data of the packet having the sequence number indicated by the retransmission request from the receiving end is stored in the retransmission buffer, retransmitting data of the packet the transmission time of which does not pass the reproduction time, to the receiving end, while discarding data of the packet the transmission time of which has passed the reproduction time; and discarding the data stored in the retransmission buffer in order starting from a packet which cannot be in time for data reproduction at the receiving end. Therefore, the transmission quality in a radio section in real-time transmission is improved and, further, the number of retransmission times is reduced.

Please amend the paragraph beginning at page 10, line 16, as follows:

According to a ninth aspect of the present invention, in the data transmission method of the eighth aspect, when the retransmission buffer is filled up to its capacity, an ~~updation~~ <u>updating</u> processes is performed, in which the retransmission data are retained while the data stored in the retransmission buffer are discarded in order, starting from a packet of the earliest reproduction time, on the basis of the reproduction time of each packet stored in the retransmission buffer. Therefore, the transmission quality in a radio section in real-time transmission is improved and, further, the number of retransmission times is reduced.

Please amend the paragraph beginning at page 14, line 8, as follows:

According to a fourteenth aspect of the present invention, there is provided a data transmission method for performing continuous data transmission from the transmitting end to the receiving end in units of packets, each packet having additional information relating to its sequence number, priority, and data reproduction time at the receiving end, while successively reproducing data of packets arrived at the receiving end. This method comprises ~~the steps of~~: at the transmitting end, giving a data reproduction time and priority information to each packet to be transmitted; and storing, as retransmission data, only data of packets the priorities of which are equal to or higher than a predetermined value, in a retransmission buffer; at the receiving end, when a transmission error is

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detected, detecting the priority information of an error packet, the reproduction time of the error packet, and the arrival time of the error packet; setting the arrival time limit of the error packet on the basis of the reproduction time; and when the detected priority is equal to or higher than the predetermined value and the error packet has arrived before the arrival time limit, outputting a retransmission request for this error packet to the transmitting end by indicating the sequence number of this error packet; at the transmitting end, when data of the packet having the sequence number indicated by the retransmission request from the receiving end is stored in the retransmission buffer, retransmitting only data of the packet the transmission time of which does not pass the reproduction time, to the receiving end, while discarding data of the packet the transmission time of which has passed the reproduction time; and discarding the data stored in the retransmission buffer in order starting from a packet which cannot be in time for reproduction at the receiving end. Therefore, the transmission quality in a radio section in real-time transmission is improved and, further, the number of retransmission times is reduced.

Please amend the paragraph beginning at page 17, line 9, as follows:

According to an eighteenth aspect of the present invention, there is provided a data transmission method for performing data transmission between a distribution server and a terminal through a relay server in units of packets, and successively reproducing data of packets received at the terminal. This method comprising ~~the steps of~~: when a transmission error has occurred between the relay server and the terminal, performing retransmission of an error packet by the relay server in response to a retransmission request from the terminal; and when a transmission error has occurred between the distribution server and the relay server, performing retransmission of an error packet by the distribution server in response to a retransmission request which has been transmitted from the terminal through the relay server. Therefore, the number of retransmission times is reduced between the distribution server and the relay server.

Please amend the paragraph beginning at page 19, line 14, as follows:

According to a twenty-first aspect of the present invention, there is provided a data transmission method for performing continuous data transmission from the transmitting end to the receiving end in units of packets, each packet having additional information relating to its sequence number, priority, and data reproduction time at the receiving end, while successively reproducing data of packets received at the receiving end. This method comprises ~~the steps of~~ at the transmitting end, when a packet the priority of which is equal to or higher than a predetermined value is transmitted as a high priority packet, storing data of this high priority packet, as retransmission data, in a retransmission buffer; managing the value of the transmitting end high priority sequence number which corresponds to the number of transmitted high priority packets, and the value of the sequence number of the high priority packet so that these values are correlated with each other; and transmitting a subsequent packet which follows the high priority packet after embedding the value of the transmitting end high priority sequence number in this subsequent packet; at the receiving end, extracting the value of the transmitting end high priority sequence number which is embedded in the received packet; managing the value of the receiving end high priority sequence number which corresponds to the number of received high priority packets; when the value of the extracted transmitting end high priority sequence number is not equal to the value of the receiving end high priority sequence number, outputting a retransmission request to the transmitting end, by indicating the value of the transmitting end high priority sequence number which is obtained on the basis of the value of the receiving end high priority sequence number; and updating the value of the receiving end high priority sequence number; at the transmitting end, only when data of the packet having the sequence number corresponding to the value of the transmitting end high priority sequence number which is indicated by the retransmission request from the receiving end is stored in the retransmission buffer, retransmitting the data of this packet to the receiving end. Therefore, retransmission of the high priority packet the priority of which is equal to or higher than a predetermined value, can be performed by simpler procedures.

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Please amend the paragraph beginning at page 21, line 25, as follows:

According to a twenty-third aspect of the present invention, in the data transmission method of the twenty-first aspect, at the receiving end, the retransmission request is performed continuously ~~be~~ several times, indicating the value of a transmitting end high priority sequence number; and at the transmitting end, the sequence number corresponding to the value of the transmitting end high priority sequence number which is indicated by the retransmission request from the receiving end is retrieved, and data of the packet having the sequence number obtained by the retrieval is retransmitted to the receiving end and, simultaneously, the correspondence between the value of the sequence number obtained by the retrieval and the value of the transmitting end high priority sequence number indicated by the receiving end is deleted. Therefore, when at least one of several transmission requests from the receiving end is normally received at the transmitting end, only the error packet the priority of which is equal to or higher than a predetermined value can be retransmitted, whereby the transmission quality in a radio section in real-time transmission can be effectively improved.

Please amend the paragraph beginning at page 38, line 16, as follows:

In the data transmission method of this first embodiment, when ~~an~~ a transmission error occurs during packet transmission, a retransmission request is made for only the packets the priorities of which are equal to or higher than a predetermined value, from the receiving end to the transmitting end, while no retransmission request is made for the error packets the priorities of which are lower than the predetermined value.

Please amend the paragraph beginning at page 39, line 24, as follows:

When the retransmission buffer 17 has no more vacant space (capacity), one of the following two processes is performed: a first ~~updation~~ updating process in which the above-described retransmission data is retained while the data of the packets stored in the retransmission buffer 17 are discarded in order starting from a packet of the earliest reproduction time; and a second ~~updation~~ updating process in which the retransmission data is retained while successively discarding the data stored in the retransmission buffer 17 so that reproduction of packet data for predetermined packets,

amongst the packet of the earliest reproduction time and the subsequent packets, is performed at regular intervals at the receiving end.

Please amend the paragraph beginning at page 42, line 13, as follows:

Further, in the packet discarding process performed when the retransmission buffer is filled to the capacity, the above-described first or second ~~updation~~ updating process may be performed on the packets in the order of ascending priorities.

Please amend the paragraph beginning at page 47, line 8, as follows:

Figure 8 is a block diagram illustrating a data receiving apparatus 203 in the data transmission system which performs the ~~read-time~~ real-time data transmission by using the data transmission method according to the modification of the third embodiment.

Please amend the paragraph beginning at page 59, line 12, as follows:

In this example, a transmission error has occurred during the first packet transmission, and so the packet (S4,1) ~~is~~ has not been received at the receiving end while only the packet (S5) ~~is~~ has been received.

Please amend the paragraph beginning at page 62, line 20, as follows:

Initially, as shown in figure 15, at a predetermined transmission timing, the high priority packet (S1,1) is transmitted, having, in its header, the sequence number and retransmission count of a previous high priority packet as well as the sequence number S1 and retransmission count 1 of this packet. In this case, there are two receiving ends for the transmitting end, i.e., the receiving end ~~I~~ 1 and the receiving end ~~II~~ 2, and transmission of the high priority packet (S1,1) is error transmission.

Please amend the paragraph beginning at page 63, line 8, as follows:

In response to the retransmission request from the receiving end ~~1~~ 1, the transmitting end retransmits the high priority packet (S1,2). However, after this retransmission, the transmitting end does not perform retransmission in response to the retransmission request from the receiving end ~~H~~ 2, because the high priority packet (S1,2) has already been retransmitted in response to the retransmission request from the receiving end ~~H~~ 2.

Please amend the paragraph beginning at page 63, line 15, as follows:

As the result of the retransmission of the high priority packet (S1,2), the receiving end ~~1~~ 1 receives the high priority packet (S1) while the receiving end ~~H~~ 2 does not receive the high priority packet (S1).

Please amend the paragraph beginning at page 63, line 19, as follows:

In this case, the receiving end ~~H~~ 2 outputs a retransmission request for the high priority packet (S1,2). In response to this request, the transmitting end increments the retransmission count and retransmits the high priority packet (S1,3).

Please amend the paragraph beginning at page 70, line 14, as follows:

Since the high priority packet (S1) has arrived at the receiving end before the time limit, the ~~transmitting~~ receiving end instructs the transmitting end to retransmit this packet.

Please amend the paragraph beginning at page 98, line 9, as follows:

To be specific, each packet transmitted from the distribution server is given additional information relating to its sequence number and priority. In the data transmission apparatus 109 as a relay server, the transmission order of the received packets is set by the transmission queue management unit 12, and then the packets are supplied to the transmission unit 13. On the other hand, the priorities of the received packets are decided by the packet priority decision unit 15. Then, in the transmission unit 13, transmission of these packets is performed according to the transmission

order which has been set. Further, those packets the priorities of which are decided as being equal to or higher than the predetermined value are stored in the retransmission buffer 17 under control of the retransmission buffer management unit ~~17~~ 18. Further, in the retransmission buffer 17, data are successively released (discarded) from the packets which cannot be in time for reproduction, under control of the management unit 18.

Please replace the abstract with the following new abstract:

A data transmission apparatus including a receiving unit for receiving transmitted packets; a priority decision unit; a retransmission packet storage unit; a retransmission instruction receiving unit for receiving a retransmission request from a terminal at the receiving end; a retransmission decision unit; a transmission queue management unit; and a transmission unit.